

In the Claims:

1. (Currently Amended) Finger operated spray pump comprising
a liquid reservoir for containing a supply of liquid,
an actuator having an atomizer, and one of a piston and a cylinder, said one of the
piston and the cylinder being in the actuator and the other of the piston and cylinder being a
separate element from the actuator, and
a one way valve means for allowing a flow of liquid in only a direction from the
supply of liquid into the cylinder,

[[a]] wherein the cylinder has ~~having~~ a volume therein for containing a portion of
liquid from the reservoir, ~~said cylinder being is~~ connected to said reservoir for receiving said
portion of liquid and ~~being is~~ connected at one end to the atomizer for ejecting part of the
liquid therein out through the atomizer,

[[a]] wherein the piston is sealingly mounted within the cylinder and is movable
within and relative to the cylinder in a spray stroke during which the volume within the
cylinder is reduced and a corresponding amount of the liquid in the cylinder is ejected
through the atomizer, and in a return stroke during which the volume within the cylinder is
increased and a corresponding amount of the liquid is drawn from the supply of liquid in the
liquid reservoir into the cylinder,

~~a one way valve means for allowing a flow of liquid in only a direction from the~~
~~supply of liquid into the cylinder,~~

wherein the actuator is a finger operated actuator means, which is displaceable
relative to the liquid reservoir, for producing relative movement between the piston and
cylinder by finger pressure to produce the spray stroke, said finger operated actuator means
being displaceable in an opposite direction during the return stroke,

wherein the piston has an outer diameter and the cylinder has a corresponding inner
diameter that are between about 0.5 mm and about 4.0 mm,

wherein the atomizer has at least one nozzle, said at least one nozzle having a diameter
of between 15 μm and 150 μm ,

wherein the piston is adapted to produce an operating pressure within the cylinder during the spray stroke of between 10 bar and 400 bar from average finger applicable forces, and

wherein the atomizer, the cylinder, the piston and the one way valve means are manufactured of materials and in a way to withstand an operating pressure of up to about 400 bar.

2. (Original) Finger pump according to claim 1, wherein the piston has a stroke length of between 2 and 30 mm

3. (Original) Finger pump according to claim 1, wherein the piston has a stroke length of between about 15 mm and about 20 mm.

4. (Original) Finger pump according to claim 1, wherein the piston is adapted to produce a liquid dose per spray stroke of between 5 μ l and 300 μ l.

5. (Original) Finger pump according to claim 1, wherein the piston is adapted to produce a liquid dose per spray stroke of between about 10 μ l and about 100 μ l.

6. (Original) Finger pump according to claim 1, wherein the piston is adapted to produce a liquid dose per spray stroke of between about 20 μ l and about 50 μ l.

7. (Withdrawn) Finger pump according to claim 1, wherein the piston is fixedly attached to the liquid reservoir, is a hollow piston and comprises a passageway means for connecting the cylinder with the supply of liquid in the liquid reservoir, the passageway means being directly connected at one end to the supply of liquid and being connected at another end to the cylinder.

8. (Currently Amended) Finger pump according to claim 1, wherein the piston is fixedly attached to the liquid reservoir, is a hollow piston and comprises a passageway means

for connecting the cylinder with the supply of liquid in the liquid reservoir, the passageway means being connected at one end to the supply of liquid via a dip tube and being connected at another end to the cylinder.

9. (Withdrawn) Finger pump according to claim 1, wherein the piston is fixedly attached to the finger operated finger actuator means and is hollow, and wherein the piston forms a connecting means for connecting the cylinder with the atomizer.

10. (Withdrawn) Finger pump according to claim 9, wherein the piston has an internal diameter of between about 0.2 mm and about 3.0 mm.

11. (Withdrawn) Finger pump according to claim 9, wherein the piston has an internal diameter of between about 0.5 mm and about 1.0 mm.

12. (Original) Finger pump according to claim 8, wherein the piston has an internal diameter of between about 0.2 mm and about 3.0 mm.

13. (Original) Finger pump according to claim 8, wherein the piston has an internal diameter of between about 0.5 mm and about 1.0 mm.

14. (Original) Finger pump according to claim 12, wherein the piston is a metal capillary tube.

15. (Withdrawn) Finger pump according to claim 10, wherein the piston is a metal capillary tube.

16. (Currently Amended) Finger pump according to claim 1, wherein the finger operated actuator means comprises an actuator that has a body made from metal.

17. (Original) Finger pump according to claim 1, wherein said metal is aluminium.

18. (Previously Presented) Finger pump according to claim 1, wherein the finger operated actuator means comprises an actuator body made from a pressure resistant plastic.

19. (Currently Amended) Finger pump according to claim 8, wherein the piston is fixedly attached to the liquid reservoir, and wherein the cylinder and the atomizer are arranged within or as part of an actuator body of the finger operated actuator means.

20. (Currently Amended) Finger pump according to claim 1, [[9,]] wherein the piston is fixedly attached to the liquid reservoir, and wherein the cylinder and the atomizer are arranged within or as part of an actuator body of the finger operated actuator means.

21. (Withdrawn; Currently Amended) Finger pump according to claim 9, wherein the cylinder is fixedly attached to the liquid reservoir, and wherein the piston is fixedly attached to an actuator body on which the finger operated actuator means is formed.

22. (Withdrawn; Currently Amended) Finger pump according to claim 10, wherein the cylinder is fixedly attached to the liquid reservoir, and wherein the piston is fixedly attached to the finger operated actuator means.

23. (Original) Finger pump according to claim 1, wherein a filter is provided between the cylinder and the atomizer to protect the atomizer.

24. (Original) Finger pump according to claim 1, wherein a second one way valve means is provided between the atomizer and the cylinder for preventing air ingress into the cylinder, via the atomizer, during the return stroke.

25. (Previously Presented) Finger pump according to claim 1, wherein the liquid reservoir is a rigid bottle and wherein the piston comprises a passageway means for

connecting the cylinder with the supply of liquid in the liquid reservoir fixedly connected thereto.

26. (Original) Finger pump according to claim 25, wherein the rigid liquid reservoir is provided with an air vent means to allow pressure equalization in the liquid reservoir.

27. (Withdrawn) Finger pump according to claim 1, wherein the liquid reservoir is a collapsible bag directly connected to the passageway means.

28. (Withdrawn; Currently Amended) Finger pump according to claim 1, further comprising a fixing means for fixing the finger operated actuator means on the reservoir in a lowered position, said fixing means being releasable for a first return stroke before activating the spray pump.

29. (Previously Presented) Finger pump according to claim 1, further comprising a return spring for producing said return stroke of the finger operated actuator means by a return spring force.

30. (Original) Finger pump according to claim 1, wherein the outer diameter of the piston and the corresponding inner diameter of the cylinder are between 1.0 mm and about 3.0 mm.

31. (Original) Finger pump according to claim 30, wherein the outer diameter of the piston and the corresponding inner diameter of the cylinder are between about 1.5 mm and about 2.5 mm.

32. (Original) Finger pump according to claim 1, wherein the diameter of the at least one atomizer nozzle is between about 30 μm and 100 μm .

33. (Original) Finger pump according to claim 1, wherein the operating pressure that the piston is adapted to produce within the cylinder during the spray stroke from average finger applicable forces is between about 40 bar and about 200 bar.

34. (Original) Finger pump according to claim 1, wherein the operating pressure that the piston is adapted to produce within the cylinder during the spray stroke from average finger applicable forces is between about 50 bar and about 100 bar.

35. (Currently Amended) an actuator having an atomizer, and one of a piston and a cylinder, said one of the piston and the cylinder being in the actuator and the other of the piston and cylinder being a separate element from the actuator, and
a one way valve means for allowing a flow of liquid in only a direction from the supply of liquid into the cylinder,

[[a]] wherein the cylinder has having a volume therein for containing a portion of liquid from the reservoir, said cylinder being is connected to said reservoir for receiving said portion of liquid and being is connected at one end to the atomizer for ejecting part of the liquid therein out through the atomizer,

[[a]] wherein the piston is sealingly mounted within the cylinder and is movable within and relative to the cylinder in a spray stroke during which the volume within the cylinder is reduced and a corresponding amount of the liquid in the cylinder is ejected through the atomizer, and in a return stroke during which the volume within the cylinder is increased and a corresponding amount of the liquid is drawn from the supply of liquid in the liquid reservoir into the cylinder,

~~a one way valve means for allowing a flow of liquid in only a direction from the supply of liquid into the cylinder,~~

wherein the actuator is a finger operated actuator means, which is displaceable relative to the liquid reservoir, for producing relative movement between the piston and cylinder by finger pressure to produce the spray stroke, said finger operated actuator means being displaceable in an opposite direction during the return stroke,

wherein the piston has an outer diameter and the cylinder has a corresponding inner diameter that are between about 1.5 mm and about 2.5 mm,

wherein the atomizer has at least one nozzle, said at least one nozzle having a diameter of between 30 μm and 100 μm ,

wherein the piston is adapted to produce an operating pressure within the cylinder during the spray stroke of between 50 bar and 100 bar from average finger applicable forces, and

wherein the atomizer, the cylinder, the piston and the one way valve means are manufactured of materials and in a way to withstand an operating pressure of at least about 100 bar.

36. (Original) Finger pump according to claim 35, wherein the piston has a stroke length of between about 15 mm and about 20 mm.

37. (Original) Finger pump according to claim 35, wherein the piston is adapted to produce a liquid dose per spray stroke of between about 20 μl and about 50 μl .

38. (Withdrawn) Finger pump according to claim 35, wherein the piston is fixedly attached to the liquid reservoir and is a hollow piston which comprises a passageway means for connecting the cylinder with the supply of liquid in the liquid reservoir, the passageway means being directly connected at one end to the supply of liquid and being connected at another end to the cylinder.

39. (Currently Amended) Finger pump according to claim 35, wherein the piston is fixedly attached to the liquid reservoir, is a hollow piston and comprises a passageway means for connecting the cylinder with the supply of liquid in the liquid reservoir, the passageway means being connected at one end to the supply of liquid via a dip tube and being connected at another end to the cylinder.

40. (Withdrawn) Finger pump according to claim 35, wherein the piston is fixedly attached to the finger operated actuator means and is hollow, and wherein the piston forms a connecting means for connecting the cylinder with the atomizer.

41. (Withdrawn) Finger pump according to claim 40, wherein the piston has an internal diameter of between about 0.2 mm and about 3.0 mm.

42. (Withdrawn) Finger pump according to claim 40, wherein the piston has an internal diameter of between about 0.5 mm and about 1.0 mm.

43. (Original) Finger pump according to claim 39, wherein the piston has an internal diameter of between about 0.2 mm and about 3.0 mm.

44. (Original) Finger pump according to claim 39, wherein the piston has an internal diameter of between about 0.5 mm and about 1.0 mm.

45. (Previously Presented) Finger pump according to claim 35, wherein the piston is hollow for the transfer of fluid therethrough.

46. (Previously Presented) Finger pump according to claim 1, wherein the piston is hollow for the transfer of fluid therethrough.